Title of Material: _____

Publisher: _____

Reviewer: _____

Percentage of Standards: _____

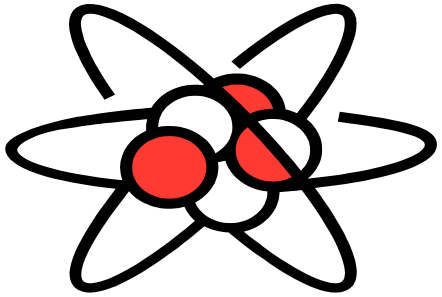
Grades Seven and Eight--possible 72 (content knowledge & skills)
(Number of Yes checks divided by 72 = percentage)

Idaho Achievement Standards

Science

for

Grades Seven and Eight



632 SCIENCE STANDARDS – MIDDLE GRADES: GRADE 7-8, SECTIONS 633 THROUGH 643.

Based on the necessary math knowledge and skills, student maturation level, and the need for secondary level Physical Science exposure, it is recommended that Earth Science be scheduled at the middle school level. The standards reflect this recommendation.

633 UNIFYING CONCEPTS OF SCIENCE.

Standard – The student will:	Content Knowledge and Skills:	YES	NO
01. Understand systems, order, and organization	a. Define and order small systems of a whole for the purpose of investigation.	**Indicate Page No**	
	b. Know the different structural levels of which an organism is comprised: cells, tissues, organs, organ systems, and organisms.	**Indicate Page No**	
	c. Know that there is order and predictability in the universe.	**Indicate Page No.**	
	d. Know that patterns and similarities allow us to organize information about our universe.	**Indicate Page No.**	
02. Understand concepts and processes of evidence, models, and explanation.	a. Use observations and data as evidence on which to base scientific explanations and predictions.	**Indicate Page No**	
	b. Use observations to make defendable inferences.	**Indicate Page No**	
	c. Develop and/or use models to explain or demonstrate a concept.	**Indicate Page No**	
	d. Develop scientific explanations based on scientific knowledge, logic, and analysis.	**Indicate Page No.**	
03. Understand constancy, change, and measurement.	a. Identify concepts in science that do not change with time.	**Indicate Page No**	
	b. Analyze changes that occur in and among systems.	**Indicate Page No**	
	c. Measure precisely in metric units using appropriate tools.	**Indicate Page No**	

04. Understand the theory that evolution is a process that relates to the gradual changes in the universe and of equilibrium as a physical state.	a. Understand the relationships of past, present, and future.	**Indicate Page No**	
	b. Understand that evolution refers to the biological, geological, or astronomical change over time.	**Indicate Page No**	
	c. Understand that equilibrium is a physical state of balance in which changes and forces occur in opposite and offsetting directions.	**Indicate Page No.**	

634 CONCEPTS OF SCIENTIFIC INQUIRY.

Standard – The student will:	Content Knowledge and Skills:	**YES**	**NO**
01. Understand scientific inquiry and develop critical thinking skills.	a. Develop questions that can be answered by conducting long-term studies	**Indicate Page No**	
	b. Design and conduct scientific investigations using controls and variables when appropriate.	**Indicate Page No**	
	c. Select and use appropriate tools and techniques to gather and display data.	**Indicate Page No**	
	d. Analyze data in order to form conclusions.	**Indicate Page No**	
	e. Think critically and logically to accept or reject a hypothesis.	**Indicate Page No**	
	f. Analyze alternative explanations and predictions.	**Indicate Page No**	
	g. Communicate and defend scientific procedures and explanations.	**Indicate Page No**	
	h. Recognize the differences among observations, hypotheses, mathematical laws, and theories.	**Indicate Page. No.**	

Standards - The student will:	Content Knowledge and Skills:	YES	NO
01. Understand the structure and function of matter and molecules and their interactions.	a. Understand that all matter is made up of atoms, which may be combined in various kinds, ways, and numbers.	**Indicate Page No**	
	b. Use properties to identify matter.	**Indicate Page No**	
	c. Identify physical properties and know the nature of a physical change.	**Indicate Page No**	
02. Understand chemical reactions.	a. Demonstrate that chemical reactions may release or consume energy.	**Indicate Page No**	
03. Understand concepts of motion and forces.	a. Know how an object's position, direction of motion, and speed can be measured.	**Indicate Page No**	
	b. Compare and contrast the relationships among different forms of energy.	**Indicate Page No.**	
04. Understand that the total energy in the universe Is constant.	a. Explain how energy can be transformed from one form to another but is neither destroyed nor created.	**Indicate Page No.**	
	b. Understand that energy is transferred from one place to another.	**Indicate Page No.**	

636 CELLULAR AND MOLECULAR CONCEPTS..

Standards - The student will:	Content Knowledge and Skills:	YES	NO
01. Understand the cell is the basis of form and function for all living things and how living things carry out their life functions.	a. Know the relationships among specialized cells, tissues, organs, organ systems, and organisms.	**Indicate Page No**	
	b. Know the parts of plant and animal cells and the functions of the various cell structures.	**Indicate Page No**	
	c. Know that most cell functions involve chemical reactions.	**Indicate Page No**	
	d. Know that genes and chromosomes carry the information for traits.	**Indicate Page No.**	
	e. Know that traits are inherited, including dominant and recessive traits.	**Indicate Page. No.**	
	f. Know that genetic information is replicated and passed on to new cells.	**Indicate Page No.**	
	g. Know that transmission of chromosomal information to offspring occurs through asexual or sexual reproduction.	**Indicate Page No.**	

637. INTERDEPENDENCE OF ORGANISMS AND BIOLOGICAL CHANGE.

Standards - The student will:	Content Knowledge and Skills:	YES	NO
01. Understand the theory of biological evolution	a. Know that species change over time when random variations in individuals enhance their survival and reproductive success in a particular environment.	**Indicate Page No**	
	b. Know that species may become extinct when the environment changes and their adaptive characteristics are insufficient to allow their survival.	**Indicate Page No**	
	c. Know that biological classifications are based on similarities, which reflect their evolutionary relationships..	**Indicate Page No**	

638. MATTER, ENERGY, AND ORGANIZATION IN LIVING SYSTEMS.

Standard – The student will:	Content Knowledge and Skills:	YES	NO
01. Understand the relationship between matter, energy, and organization to trace matter as it cycles and energy as it flows through living systems and between living systems and the environment.	a. Know that the energy stored in food is primarily derived from the sun through photosynthesis.	**Indicate Page No**	
	b. Know that the distribution and abundance of organisms and populations in ecosystems are limited by the availability of matter and energy.	**Indicate Page No.**	
	c. Know that atoms and molecules cycle among the living and nonliving components of the biosphere.	**Indicate Page No.**	
	d. Trace energy flows through ecosystems in one direction, from photosynthetic organisms to herbivores to carnivores and decomposers.	**Indicate Page No.**	
02. Understand the individual behavior of organisms and their interactions in populations and communities as influenced by physiological and environmental factors.	a. Know that organisms have behavioral responses to internal and external stimuli.	**Indicate Page. No.**	
	b. Know that living organisms have the capacity to produce populations of infinite size but that environments and resources are finite.	**Indicate Page. No.**	

639. EARTH AND SPACE SYSTEMS.

Standard – The student will:	Content Knowledge and Skills:	YES	NO
01. Understand scientific theories of origin and subsequent changes in the universe and earth systems.	a. Know that there are interactions among the solid earth, oceans, atmosphere, and organisms, which result in a change of the earth's system. (Some interactions are observable such as earthquakes and volcanic eruptions, but many take place over hundreds of millions of years.)	**Indicate Page No**	
	b. Compare earth with other planets with emphasis on conditions necessary for life.	**Indicate Page No**	
	c. Understand the motions that explain such occurrences as the day, the seasons, the year, phases of the moon, eclipses, and the tides.	**Indicate Page No**	
	d. Know that the development of life caused dramatic changes in the composition of the earth's atmosphere.	**Indicate Page No.**	
	e. Know that the universe is constantly expanding.	**Indicate Page. No.**	
	f. Know that stars and galaxies have a life cycle.	**Indicate Page No.**	
	g. Know methods used to estimate geologic time (observing rock sequences, using fossils to correlate the sequences at various locations).	**Indicate Page No.**	
02. Understand geo-chemical cycles and energy in the earth system.	a. Know that earth systems have internal and external sources of energy.	**Indicate Page No.**	
	b. Know that the earth's internal heat causes the plates of the earth's surface to move.	**Indicate Page No.**	
	c. Know that the heating of the earth's surface and atmosphere by the sun drives convection within the atmosphere and oceans, producing winds and ocean currents affecting global climate.		

640. TECHNOLOGY.

Standard – The student will:	Content Knowledge and Skills:	YES	NO
01. Understand the relationship between science and technology and develop the abilities of technological design and application.	a. Know that science and technology are human endeavors interrelated to each other, to society, and to the work place.	**Indicate Page No**	
	b. Compare and contrast scientific inquiry and technological design in terms of activities, results, and influences on individuals and society; know that science enables technology and vice versa.	**Indicate Page No**	
	c. Create a tool to perform a specific function.	**Indicate Page No**	
	d. Use available and appropriate technology.	**Indicate Page No.**	
	e. Know the elements of technological design, which include the following: -Identify a problem; -Propose a solution; -Implement a proposed solution; -Evaluate the solution and its consequences; -Communicate the problem, process, and solution.	**Indicate Page No.**	

641. PERSONAL AND SOCIAL PERSPECTIVES.

Standard – The student will:	Content Knowledge and Skills:	YES	NO
01. Understand common environmental quality issues, both natural and human induced.	a. Identify environmental issues and conduct studies.	**Indicate Page No**	
02. Understand the causes and effects of population change.	a. Understand the effect of technological development and the growth of human population on the living and nonliving components of the environment.	**Indicate Page No**	
03. Understand the importance of natural resources and the need to manage and conserve them.	a. Explore alternative sources of energy.	**Indicate Page No**	
	b. Understand the role and effect of management of natural resources.	**Indicate Page No**	
04. Understand different uses of technology in science and how they affect our standard of living.	a. Know that there are predictable and unpredictable consequences of technology.	**Indicate Page No**	

642. HISTORY OF SCIENCE

Standard – The student will:	Content Knowledge and Skills:	YES	NO
01. Understand the significance of major scientific milestones.	a. Understand the impact of historical scientific events.	**Indicate Page No**	

643. INTERDISCIPLINARY CONCEPTS.

Standard – The student will:	Content Knowledge and Skills:	YES	NO
01. Understand that interpersonal relationships are important in scientific endeavors.	a. Work in teams to solve problems.	**Indicate Page No**	
02. Understand technical communication.	a. Read, understand, and follow technical instructions.	**Indicate Page No**	
	b. Write and articulate technical information.	**Indicate Page No.**	
	c. Write a long-term investigation.	**Indicate Page No.**	